Notice of Allowability	Application No.	Applicant(s)	
	10/628,542	KLENDWORTH ET AL.	
	Examiner	Art Unit	
	Ling-Siu Choi	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Amendment filed June 23, 2005*

2. ☒ The allowed claim(s) is/are *20-25*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This Office Action is in response to the Amendment filed June 23, 2005. Claims 1-19 were canceled and claims 20-25 are now pending.

Allowable Subject Matter

2. Claims 20-25 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Bottrill (US 4,473,672), Alexandre et al. (US 6,465,543), and Maxfield et al. (WO 95/06090).

An exfoliated clay-filled polyolefin composition prepared by	
A	treating a **non-acid-treated smectite clay** with a **Ziegler-Natta catalyst** in the presence of a hydrocarbon
B	**polymerizing an olefin** in the presence of the treated clay and an organoaluminum cocatalyst selected from the group consisting of trialkylaluminums, triarylaluminums, alkyl aluminum halides, alkyl aluminum dihalides, and mixtures thereof

(summary of claim 20)

Bottrill discloses a polyolefin composition comprising an olefin polymer and an aluminosilicate clay, the composition being obtained by the process comprising the steps of **(1)**

treating an **aluminosilicate clay** with (a) an organic magnesium halide compound or (b) an organic magnesium compound, followed by a halogen-containing compound, **(2)** adding to the product of step (1) at least one compound of a transition metal of Group IVA, VA or VIA of the Periodic Table, and **(3)** effecting the polymerization of at least one olefine monomer in the presence of the product of step (2) and an organic compound of aluminium such as aluminum trialkyl, wherein the aluminosilicate clay is in a range from 10 up to 90 wt% of the composition (claims 1 and 5). However, Bottrill does not teach or fairly suggest the **exfoliated smectite clay**-filled polyolefin comprising trialkylaluminum, triarylaluminum, alkyl aluminum halide, alkyl aluminum dihalide, or a mixture thereof.

Alexandre et al. disclose a nanocomposite obtained by the process comprising the steps of (a) contacting an organophilic clay such as sodium montmorillonite with an excess of **methyl aluminoxane** in the presence of an inert solvent to form a clay/methyl aluminoxane complex; (b) removing the solvent and excess methyl aluminoxane from the complex; (c) contacting the complex of step (a) with a Ziegler-Natta catalyst in the presence of a non-polar inert solvent to make a clay/methyl aluminoxane/catalyst complex; and (d) contacting the complex of step (c) with ethylene or propylene under polymerization conditions to form the nanocomposite, wherein the organophilic clay is made by dispersing and swelling a hydrophilic smectite clay in water, followed by removing the water from the swelled clay by freez-drying (col. 2, lines 18-38; claims 1, 4, 5, and 7). However, Alexandre et al. do not teach or fairly suggest the exfoliated smectite clay-filled polyolefin comprising **trialkylaluminum, triarylaluminum, alkyl aluminum halide, alkyl aluminum dihalide, or a mixture thereof.**

Maxfield et al. disclose a nanocomposite comprising a polymer matrix and a smectite

clay, the nanocomposite being obtained by the process comprising the steps of (a) contacting an **organophilic clay** with an excess of **methyl aluminoxane** in the presence of an inert solvent to form a clay/methyl aluminoxane complex; (b) removing the solvent and excess methyl aluminoxane from the complex; (c) contacting the complex of step (a) with a Ziegler-Natta catalyst in the presence of a non-polar inert solvent to make a clay/methyl aluminoxane/catalyst complex; and (d) contacting the complex of step (c) with ethylene or propylene under polymerization conditions to form the nanocomposite, wherein the organophilic clay is made by dispersing and swelling a hydrophilic smectite clay in water, followed by removing the water from the swelled clay by freez-drying (claims 8-9). However, Maxfield et al. do not teach or fairly suggest the **exfoliated smectite clay**-filled polyolefin comprising **trialkylaluminum, triarylaluminum, alkyl aluminum halide, alkyl aluminum dihalide, or a mixture thereof.**

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

LING-SUI CHOI
PRIMARY EXAMINER

September 1, 2005